

Patent Claims

1. Use of core/shell particles whose shell forms a matrix and whose core is essentially solid and has an essentially monodisperse size distribution as template for the production of inverse opal structures.
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2. Use according to Claim 1, characterised in that the shell in the core/shell particles is bonded to the core via an interlayer.
- 10 3. Use according to at least one of the preceding claims, characterised in that the core:shell weight ratio in the core/shell particles is in the range from 20:1 to 1.4:1, preferably in the range from 6:1 to 2:1 and particularly preferably in the range from 5:1 to 3.5:1.
- 15 4. Use according to at least one of the preceding claims, characterised in that the shell in the core/shell particles consists of essentially un-crosslinked organic polymers, which are preferably grafted onto the core via an at least partially crosslinked interlayer.
- 20 5. Use according to at least one of the preceding claims, characterised in that the core in the core/shell particles consists of an organic polymer, which is preferably crosslinked.
- 25 6. Use according to at least one of Claims 1 to 4, characterised in that the core in the core/shell particles consists of an inorganic material, and the core:shell weight ratio is preferably in the range from 5:1 to 1:10, in particular in the range from 2:1 to 1:5 and particularly preferably in the region below 1:1.
- 30 7. Process for the production of inverse opal structures, characterised in that
 - a) a dispersion of core/shell particles whose shell forms a matrix and whose core is essentially solid is dried,
 - b) optionally one or more precursors of suitable wall materials are
35 added, and
 - c) the cores are subsequently removed.

- 5 8. Process for the production of inverse opal structures according to Claim 7, characterised in that, in a step a2), the application of a mechanical force to a mass of the core/shell particles pre-dried in step a1) takes place.
- 10 9. Process for the production of inverse opal structures according to Claim 8, characterised in that the action of a mechanical force takes place through uniaxial pressing or during an injection-moulding operation or during a transfer moulding operation or during (co)extrusion or during a calendering operation or during a blowing operation
- 15 10. Process for the production of inverse opal structures according to at least one of Claims 7 to 9, characterised in that the precursor in step b) is a solution of an ester of an inorganic ortho-acid with a lower alcohol.
- 20 11. Process for the production of inverse opal structures according to at least one of Claims 7 to 10, characterised in that step b) is carried out under reduced pressure, preferably in a static vacuum of $p < 1$ mbar.
- 25 12. Process for the production of inverse opal structures according to at least one of the preceding claims, characterised in that step c) comprises calcination, preferably at temperatures above 200°C, particularly preferably above 400°C.
- 30 13. Process for the production of inverse opal structures according to at least one of Claims 7 to 11, characterised in that step c) is an etching process, preferably etching with HF.
- 35 14. Process for the production of inverse opal structures according to at least one of the preceding claims, characterised in that the core/shell particles are removed in step c).